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NUTRITION SURVEY

PART TWO

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NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES

DIVISION OF HEALTH SERVICES

REPORT

OF THE

NORTH CAROLINA NUTRITION SURVEY

PART TWO

December, 1974

NORTH CAROLINA

DEPARTMENT OF HUMAN RESOURCES

DIVISION OF HEALTH SERVICES

STATE OF NORTH CAROLINA

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ABSTRACT

During the Spring of 1970, respondents in a representative sample of North Carolina households were asked to provide information about home source consumption of food and drink on the day prior to interview. Separate dietary recalls for children ages 1-5 years (preschoolers) were recorded. The 24-hour recalls were evaluated on the basis of selected nutrient standards; a dietary was judged to be inadequate if it failed to provide at least one-half of the survey standard for one or more of five nutrients.

Results show that 27 percent of the households and 48 percent of the preschool children had diets that were rated inadequate. The percentages of household dietaries which were below one-half of the survey standard for each of the five nutrients were: vitamin C (13%), calcium (9%), vitamin A value (8%), iron (7%), protein (3%). Among preschool children, iron and vitamin C levels were frequently below one-half of the survey standards. For both households and children, dietary adequacy appeared to be associated with geographical region and with certain economic and educational characteristics of the sample population.

Whereas the Part One report of the survey examined dietary data in terms of nutrient intakes, Part Two represents an analysis of food groups. Section V provides some interesting marketing and nutritional information about foods utilized by the general population in the State sample while Section VI examines food utilization differences observed among geographical regions and among population sectors representing varying levels of household income, nutrition knowledge of the homemaker and education of the homemaker.

In Section VII, food utilization in different population sectors is related to quality of the household diet. While results observed for inadequate diets were largely anticipated from the Part One report, viz., the generalized deficits observed for dairy products and fruits and vegetables, some additional findings may provide important new insights into the management of dietary problems in the State.

Section VIII of this report examines the extent to which individuals in survey households failed to eat at different ingestion periods. These data may represent a singularly important finding of the survey, that individuals representing lower levels of dietary adequacy were more prone to skip meals and ate snacks less often than individuals representing diets of better quality. A related finding was that the A.M. meal and snacks contributed substantially to the general population's ingestion of calcium and vitamin C. Thus, for these two nutrients at least, failure to eat the A.M. meal and snacks may have resulted in much of the deficiency observed in the survey.

Finally, Section IX discusses some highlights of the findings as they relate to nutrition programs in the State. It is hoped that these suggestions, together with other findings of the survey, may point the way to improved nutrition education efforts throughout North Carolina.

I. INTRODUCTION

The North Carolina Nutrition Survey was conducted by the State Board of Health, now the Division of Health Services, during the Spring of 1970. The sample was selected by the Research Triangle Institute. Data were collected by the Nutrition staff of the State Board of Health and were processed and analyzed by the Public Health Statistics staff. Initial findings of the survey were submitted to Governor Robert W. Scott and to the people of North Carolina in July, 1971 [1].

Details of the survey design and methods have been reported [1, 2]. Briefly, the survey was designed to provide a representative sample of the household population of North Carolina. Once the scientifically designed sample of households was drawn, trained nutritionist-interviewers and field technicians collected the data by personal interview with an adult member of the household who had responsibility for meal preparation. In addition to dietary data, demographic and socio-economic household data were collected for purposes of classification. Dietaries and medical characteristics of children ages one through five years were also obtained.

The household dietary data were collected by obtaining a record of the food consumed from the home food supply on the day prior to the interview. Food models were used to help respondents recall amounts of foods consumed during the 24-hour period. The food models were designed in conjunction with a program for data processing so that an electronic computer could be used to determine the gram amounts and caloric and nutrient values of food consumed. In evaluating the diets, household

nutrient intakes were compared to nutrient standards judged to be adequate for the age, sex, weight, and food source characteristics of the household members.

Highlights of the findings reported in Part One [1] are presented in Section IV of this report. From these results, it would appear that purchasing power and knowledge alone are not sufficient to explain the dietary deficiency. Another principal operating factor is food choice or preference, a highly cultural phenomenon which involves educational and sociological backgrounds and conditions. Thus, this report examines the survey data in terms of the edible foods utilized by households in different geographical regions and in different economic and educational sectors of the population.

Definitions for the various indices and classifications used in this report are given in Section II and some qualifications of the data in Section III. Attention is directed to the limitations of the food data for preschool children (see Section III.B.). For the reasons given, no attempt is being made to further examine the dietaries of preschool children at the present time.

A final word concerning the data of this report is that variances for the survey estimates have not been computed. Thus, associations noted herein are applicable only to the survey sample and generalizations to the entire household population are made at risk. Such generalizations are particularly risky for results based on small sample sizes.

II. DEFINITIONS

A. Survey Standard

The term "survey standard" is used to mean the daily intake of a nutrient judged to be adequate for the age, sex, weight, and food source characteristics of the members and guests of a household unit. Equivalent terms used variously in survey reports include "reference standard," "standard allowance," "recommended amount," "recommended allowance." All refer to the standards used in the survey as detailed in a published report [1].

B. Percent of Standard

In the analysis of survey results, the amount of a nutrient consumed by a household has been expressed as a percentage of the survey standard for the nutrient.

C. Nutrient Deficiency

The word "deficiency" is associated with the intake of a nutrient and indicates that the nutrient intake was below one-half of the survey standard for the nutrient.

D. Quality of Diet

The terms "optimal," "adequate," and "inadequate" are used to describe the overall quality of a diet. On the basis of the percents of standard calculated for five nutrients (protein, iron, calcium, vitamin A value, and vitamin C), the rating criteria were as follows:

Optimal: Met North Carolina Nutrition Survey standard for 5 nutrients.

Adequate: Met at least half of the North Carolina Nutrition Survey standard for 5 nutrients but less than the North Carolina survey standard for 1 or more nutrients.

Inadequate: Met less than half of the North Carolina Nutrition Survey standard for 1 or more nutrients.

In previous survey reports, the terms "nutritional failure," "nutrient deficiency," "undernutrition," "dietary inadequacy," and "low quality diet" have been used variously to refer to the circumstance of a diet having been rated inadequate.

E. Food Groups

In this report, food choices of North Carolinians are examined in terms of food groups. The food groups were selected by nutritionists of the State Board of Health as being the most meaningful possible groupings for nutritional analysis.

F. Food Items

Altogether, 690 individual food items were reported in the survey. The detailed data are examined in a previous report [3] and highlights are found in Section V of the present report.

G. Frequency of Food Selection

In this report, frequency refers to the "average weekly number of household uses of items in the food group." These averages result from dividing the total number of recorded uses of the food by the number of households reporting dietaries (1,160) and multiplying the quotient by seven. While this procedure allows for meaningful interpretation and

comparison of the frequencies, it should be noted that food records were actually taken only for a 24-hour period and only for diets on weekdays, Monday through Friday. Since weekend and weekday eating habits may be dissimilar, the weekly frequencies should not, therefore, be taken at face value.

H. Quantity of Food Consumed

In Section V, the amounts of foods utilized by the general household population of the State are described. Quantities of food consumed from the home source are expressed as the average amounts per person per day. However, in Sections VI and VII where comparisons among population subgroups are made, quantities are expressed as the average gram amounts per person per meal. The per meal comparison is required since population subgroups vary with respect to the prevalence of home source meals [4].

The numerators for the per meal quantities are total gram intakes for all meals and snacks from the home source. The denominators are counts of A.M., Noon, and P.M. meals from the home source. Actual per meal intakes are therefore overstated to the extent that foods were consumed as snacks.

For each food item reported in the survey, the per meal gram quantities are available in another report [3].

I. Caloric and Nutritive Values of Food

For each food item reported in the survey, the per meal quantities of calories, calcium, vitamin A value and vitamin C are given in a previous report [3]. A summary of the per meal caloric and nutrient values for diet adequacy groups is given in the table on page 42 of this report.

J. Sources of Food

Survey respondents were asked to specify the sources of food consumed by each household member and guest on the day of the dietary recall. For four ingestion periods--A.M., Noon, P.M., Snacks--alternative responses were:

Ate from home source;
Ate from other source;
Did not eat;
(Respondent) does not know.

K. Geographical Region

Geographical definitions of the Eastern, Piedmont, and Western regions vary in published reports. Counties comprising the three regions of this survey are depicted in Figure 1 of the Part One report [1].

L. Household Income

Each survey respondent was asked to select from 18 income categories the one which most nearly represented the gross household income during the previous year. The reported income classes have been grouped into five categories:

Under $1500
$1500 - 2999
$3000 - 5999
$6000 - 8999
$9000 or more

M. Nutrition Knowledge of the Homemaker

Nutrition knowledge of the homemaker was measured by a test developed for the survey whereby ten questions were administered verbally to the homemaker respondent. Details concerning the test and its administration may be found in the published report of the survey [1].

Test scores have been grouped as follows:

Score	Knowledge of Basic Nutrition
0 - 3	Very Limited
4 - 7	Limited
8 -10	Good

N. Education of the Homemaker

The years of schooling completed by the homemaker have been grouped into five categories:

0 - 6 years
7 - 10 years
11 - 12 years
13 - 15 years
16 or more years

III. QUALIFICATIONS OF THE DATA

A. Corrections Due to Errors in Dietary Recalls

Following the release of the report North Carolina Nutrition Survey: Part One [1], 28 household and 34 preschool dietaries were found to contain gross errors and were subsequently deleted from analysis. Shown below are the effective sample sizes for the several stages of the survey design and analysis:

	Households	Preschool Children
Selected for interview	1,315	392
Dietaries completed	1,188	372
Dietaries deleted	28	34
Dietaries remaining	1,160	338

Dietary results reported in the Part One report were based on completed dietaries--1,188 for households and 372 for preschoolers. Of these numbers, the subsequent deletions represent 2.4 percent of the household file and 9.1 percent of the preschool file.

Regarding the effect of these deletions upon survey results previously reported, the Statewide estimate of the percentage of inadequate household diets remains unchanged at 27 percent. The percentage of optimal diets decreased by one percentage point to 26 percent. Population subgroups most affected by the deletions were the $6000-8999 income group and the 13-15 years education group, both of which netted very slight increases in estimates of the percentage of inadequate diets.

The effect of the preschooler deletions upon survey results was considerably greater. The estimate of the percentage of inadequate diets

increased from 43 to 48 percent and the percentage for optimal diets dropped from 17 to 10 percent. Among population subgroups, changes were greatest for children of the Western Region, urban place of residence, white race, 1-3 year age group, and the $3000-5999 and $9000+ income groups. Understatements of specific nutrient deficiencies were greatest for iron and vitamin C; the percentage of preschoolers with observed iron deficiency increased from 28 to 31 percent and the percentage with observed vitamin C deficiency increased from 19 to 21 percent.

Section IV of this report highlights the survey findings as corrected.

B. Limitations of the Data for Children

In the survey, dissimilar age distributions were observed for children in different diet adequacy groups. To wit: 97 percent of the children with optimal diets were 4-5 years old while 73 percent of the children with inadequate diets were 1-3 years old. Moreover, dissimilar age distributions were observed for children of different regions and different economic and educational sectors. Accordingly, comparisons of food utilization among children should only be made on an age-specific basis.

A study of food utilization among children was a major objective of this survey. However, until variances are computed so that the impact of small numbers can be evaluated, the age group sample sizes for children of different diet adequacy groups and population sectors do not permit the desired analyses. Thus, the food data for children are not being examined at this time.

IV. SURVEY HIGHLIGHTS, PART ONE (CORRECTED)

A. Households

Wide variation was observed in the dietaries of different North Carolina households during the Spring of 1970. While approximately 26 percent of the household diets supplied recommended amounts of the five nutrients studied, an equal percentage of the diets supplied less than half of the survey standard for one or more of the nutrients. Nutrient consumption most often below half of the survey standard involved vitamin C (13 percent of the households), calcium (9%), and vitamin A value (8%). Low iron levels were observed in 7 percent of the households, but low protein in only 3 percent. Seven percent of the household diets failed to supply half of the survey standard for calories.

A study of factors associated with the quality of household diets revealed dietary differences by race, region, economic indicators, nutrition knowledge and education of the homemaker. Forty-eight percent of the nonwhite households and 23 percent of the white households had diets which were rated inadequate. Region differentials reflected greater nutritional deficiency in the East (38%) than in the Piedmont (25%) and the West (21%). Except for iron, deficiencies in calories and the nutrients studied were most numerous in the East and least in the West. The incidence of iron deficiency was highest in the West (8%) and lowest in the Piedmont (5%).

Although the percentage of inadequate diets decreased at higher levels of income, high income did not insure a good diet. Among households

reporting annual incomes of $9000 or more, 26 percent of the household diets were rated optimal and 22 percent were rated inadequate. Within this income group, low intakes of iron and vitamin C were observed twice as often as low intakes of the other three nutrients; ten percent of the household diets failed to supply half of the iron standard and 9 percent did not supply half of the vitamin C standard.

Among households reporting less than $1500 in annual income, 23 percent of the household diets were rated optimal and 46 percent were rated inadequate. Calcium intake was below half of standard in 23 percent of these households, vitamin A value in 21 percent, and vitamin C in 19 percent. Iron intake was below half of standard in only 5 percent of these low income households (one-half the prevalence observed among high income households).

The educational level of the homemaker was found to be a favorable factor for quality of the household diet if the homemaker had completed 11-12 years of schooling with no post high school training or if the homemaker had completed college. At these levels of homemaker's education, approximately one household diet out of five was rated inadequate. At other levels of homemaker's education (0-6, 7-10, or 13-15 years), approximately one household diet out of three was rated inadequate.

In the study of nutrition knowledge, proportionately more optimal diets and proportionately fewer inadequate diets were observed when the homemaker achieved a high score on a test of nutrition knowledge. In the presence of "very limited" knowledge, 25 percent of the household diets were rated optimal and 27 percent were rated inadequate. Vitamin A value and vitamin C levels each were below half the survey standard in 13 percent

of these households; low calcium intake was observed in 12 percent. Protein deficiency and iron deficiency each occurred in about 5 percent of these households. In the presence of "good" nutrition knowledge, on the other hand, 32 percent of the household diets were rated optimal and 20 percent were rated inadequate. Among these households, vitamin C and iron deficiencies were more prevalent than deficiencies in other nutrients. Low vitamin C levels were observed in 9 percent of the households and low levels of iron in 7 percent.

B. Children Ages 1-5 Years

In the study of preschool children, 10 percent of the diets were rated optimal and 48 percent were judged to be nutritionally inadequate. It should be noted, however, that intake values did not include nutritive supplements which were reportedly being used by forty-eight percent of the children. Intake values also did not include commercially prepared milk formula, but a review of the recall records shows that formula was indicated for only four children.

On the basis of food intakes alone, 31 percent of the children failed to meet half of the survey standard for iron, 21 percent were below half of the vitamin C standard, 12 percent did not meet half of the calcium standard, 9 percent failed to meet half the standard for vitamin A value. Protein intake and caloric intake each were below half of the survey standard in only 2 percent of the children's dietaries. Age, sex, height, and weight were differentiating factors for specific nutrient deficiency and overall quality of the preschool diet.

Although the observed prevalence of inadequate children's diets was greater in the Western Region (53%) than in the East (46%) and the Piedmont (45%), specific nutrient deficiencies were fewest in the West except for iron. Forty percent of the Western Region preschoolers were below half the iron standard compared to 31 percent in the East and 22 percent in the Piedmont. Vitamin C deficiency was about equally prevalent in all regions while vitamin A deficiency was most prevalent in the East (16%) and calcium deficiency was most prevalent in the Piedmont (21%).

Income differentials for quality of the preschool diet were less pronounced than those observed for households. Although some improvement in nutrient intakes was observed for incomes greater than $6000, iron deficiency was observed in 30 percent of the high income group ($9000+) compared to 20 percent of the low income group (<$3000).

In the study of children's diets, "good" nutrition knowledge of the homemaker was found to be a favorable factor for calcium and the vitamins A and C, but was not differentiating for protein and iron. The percentages of inadequate diets observed among children at different levels of the homemaker's knowledge were: good knowledge (39%); limited knowledge (50%); and very limited knowledge (53%).

V. FOODS CONSUMED BY NORTH CAROLINIANS

On the light side of things, this report profiles the average North Carolinian's diet during the Spring of 1970 when the survey was conducted. From the home food supply only, this consumer . . .

Ate an average of 4.4 ounces of meat, poultry and fish per day and preferred the Southern favorite, fried chicken, to other selections; averaged 5.5 ounces of whole milk and 1.66 slices of bread per day; drank two and a half times as much coffee as tea; consumed about 5 served eggs per week and showed preference for scrambled eggs over fried eggs, corn flakes over other cold breakfast cereals and grits over other hot breakfast cereals; consumed a biscuit a day; ate about 9 ounces of fruit and vegetables including juices a day and selected turnip greens three times as often as any other leafy vegetable; consumed twice as many raw apples as raw oranges and ate more bananas than oranges; preferred home recipe cakes to commercial cake mixes and cake (especially devil's food) to pie (especially apple); selected margarine four times as often as butter and averaged three teaspoons of sugar from the sugar bowl per day. . . .

Details concerning the food items reported in the survey are provided in another report [3]. In the table on page 16, foods comprising North Carolina diets are described in terms of food groups. Brief discussions of the food groups follow.

North Carolina Nutrition Survey

FOODS CONSUMED FROM THE HOME FOOD SUPPLY

Food Group	No. of Household Uses Per Week	Grams Per Person Per Day	Percentage Contribution of Foods to Caloric and Nutrient Intakes					
			Calories	Protein	Calcium	Iron	Vit A Value	Vit C
Dairy Products	18.6	225	10.5	14.0	51.1	1.0	9.4	3.7
Beef	3.3	44	8.6	16.3	1.0	13.2	12.8	0.6
Pork	2.7	29	5.5	9.9	0.5	8.3	1.0	0.1
Veal and Lamb	0.1	1	0.2	0.5	0.0	0.3	0.0	0.0
Sausage and Luncheon Meat	3.3	18	4.0	4.2	0.2	7.0	0.2	0.0
Fish and Shellfish	1.0	11	1.3	3.4	0.8	1.3	0.2	0.1
Poultry	2.5	20	2.7	8.5	0.5	3.6	2.7	0.2
Eggs	6.2	42	4.6	7.9	5.0	7.8	13.1	0.0
Legumes and Nuts	3.7	42	3.5	5.3	2.8	8.7	0.5	1.4
Citrus Fruits and Tomatoes	6.9	81	2.0	0.8	1.6	2.1	5.8	50.0
High Vitamin A Fruits and Vegetables	2.5	26	1.0	0.7	3.2	1.9	29.7	12.8
White Potatoes	4.1	55	4.3	2.2	1.5	3.8	0.6	13.4
Other Fruits and Vegetables	10.9	88	3.0	1.8	3.2	5.6	6.9	12.8
Flour and Cereal Products	24.5	136	18.3	13.3	13.7	19.9	1.7	0.5
Homemade Self-Rising Flour Biscuits	2.1	22	4.9	2.4	7.8	3.5	0.0	0.0
Desserts	6.0	31	6.1	2.1	2.3	2.5	1.3	0.6
Sugar and Sweets	18.6	130	6.6	0.3	0.7	1.6	0.4	0.9
Fats, Oils and Cream	16.3	19	7.7	2.2	0.5	1.5	5.1	0.0
Mixed Food	1.6	28	2.5	3.2	2.0	3.2	3.3	1.9
Soups and Sauces	2.5	36	1.9	0.9	0.6	1.0	4.7	0.5
Condiments	16.3	366	0.6	0.1	0.9	2.4	0.5	0.5

A. Dairy Products

North Carolinians consumed from the home food supply an average of 5.5 ounces of whole fluid cow's milk per person per day and 7 out of ten households used whole fresh milk at least once a day. This food item contributed nearly a third of all calcium consumed from the day's home food supply. Other fluid milk products accounted for 10 percent of the day's home source calcium while cheese and processed cheese products contributed about 4 percent, ice cream and ice milk products contributed 3 percent, and baked custards, puddings, and yogurt accounted for 1 percent of the calcium in the household diets. Cream and butter selections are included in the food group Fats, Oils and Cream (see p. 23).

Altogether, dairy products (except cream and butter) contributed 11 percent of the day's home source calories, half of all calcium in the household diet, 9 percent of the vitamin A value, and 4 percent of the vitamin C.

B. Meat, Poultry and Fish

The per person home source consumption of these foods averaged 122 grams per day (approximately 4.4 ounces). Households selected the Southern favorite, fried chicken, 27 percent more often than its nearest competitor, pork sausage. Ground beef hamburgers were a close third choice. Shown on the following page are the ten most frequently selected items which together comprised seventy percent of all meat, poultry and fish selections.

Food Item	Percentage of Total Meat, Poultry and Fish Selections
Fried Chicken	12.6
Pork Sausage	9.9
Hamburgers	9.4
Bologna	7.6
Pork Chops	7.5
Boiled Ham	5.7
Beef Roast	4.8
Beef Steak	4.2
Frankfurters	4.2
Cured Ham	4.0
TOTAL	70.0

Sausage and Luncheon Meat: Items in this group accounted for one of every four selections of meat, poultry and fish. Households averaged 3 to 4 uses per week. Pork sausage, link or bulk, accounted for 39 percent of the selections; bologna (all samples), 29%; frankfurters, 16%; all other products, 16%. The latter group included variety sausages and deviled and potted meats.

Beef: The beef group also accounted for a quarter of all meat, poultry and fish selections. Households averaged more than three selections per week. Regular ground beef (hamburger) accounted for more than a third of the selections. Beef roast, beef steak, and beef cut for stewing accounted for 19, 17, and 15 percent respectively. Meatloaf, beef liver, corned beef, and dried beef comprised the remaining 12 percent of the beef group.

Pork: One of every five meat, poultry and fish selections were from the pork group. On the average, pork items were included in the household diet nearly three times a week. Selections were distributed as follows: composite cuts, 36%; boiled ham, 28%; cured ham, 20%; fresh roast, 9%; spareribs, 6%; other selections, 2%. The latter group included hog liver, pigs feet, chitterlings, and pork brains. Bacon and pork salt meat are included in the food group Fats, Oils and Cream (see p. 23).

Poultry: The poultry group accounted for one of five meat, poultry and fish choices. On the average, poultry was included in the household diet 2 to 3 times a week. More than sixty percent of the selections were fried chicken. Thighs and breasts were used for frying more often than other individual fryer parts.

Fish and Shellfish: The household diet included fish or shellfish an average of once a week. Fried fish accounted for 27 percent of the selections, fish sticks and cakes for 20 percent, tuna for 15 percent, and shrimp for 14 percent.

Veal and Lamb: Veal represented one-half of one percent and lamb cuts accounted for less than one-tenth of one percent of all meat, poultry and fish selections in the household diet. Together, veal and lamb averaged about four household uses per year.

C. Eggs

An estimated eight out of 10 North Carolina households reported at least one daily use of served eggs and scrambled eggs were preferred. The per person consumption was .74 eggs per day or an average of 5 eggs per week. These figures do not include eggs used in recipes.

Served eggs accounted for 8 percent of the day's home source iron, 8 percent of the protein, 13 percent of the vitamin A value, and 5 percent of the calcium.

D. Legumes and Nuts

On the average, households used items from this group nearly four times a week. Peanut butter accounted for a third of the selections; red beans and lima beans accounted for another third. A preponderance of the red beans were dried while lima beans were more often canned or frozen. Cowpeas or blackeye peas (frozen) were used less often than either red or lima beans.

The group as a whole contributed about 9 percent of the day's home source iron, 5 percent of the protein, and nearly 3 percent of the calcium ingested.

E. Citrus Fruits and Tomatoes

Households averaged one selection a day from this food group. Juices, averaging 1.5 ounces per person per day, accounted for 44 percent of the group selections and contributed a third of the day's home source vitamin C. Orange juice accounted for nearly 9 of ten juice selections and frozen orange juice was preferred. Among vitamin C-enriched fruit drinks, which averaged one-third ounce per person per day, the orange drink was preferred over grape, fruit punch, and apple.

During the period of this survey, raw tomatoes were used nearly as often as all raw citrus fruits combined. Altogether, the citrus fruits and tomatoes group contributed 50 percent of the vitamin C and 6 percent of the vitamin A value consumed from the day's home food supply.

F. High Vitamin A Fruits and Vegetables

This food group includes dark green and deep yellow fruits and vegetables with high vitamin A content. Households reported 2 to 3 uses per week on the average. Canned peaches packed in heavy syrup accounted for 23 percent of the selections. Other selections included turnip greens, 18%; sweet potatoes, 14%; carrots, 9%; broccoli, collards, and mustard greens, each 6%. Altogether, the group contributed 30 percent of the day's home source vitamin A value, 13 percent of the vitamin C, 3 percent of the calcium and 2 percent of the iron.

G. White Potatoes

White potatoes were included in the household diet an average of four times a week. Mashed and boiled potatoes accounted for half of the selections. Frozen french fries were used more often than raw-fried potatoes. Altogether, the potato group contributed 4 percent of the day's home source calories and 13 percent of the vitamin C.

H. Other Fruits and Vegetables

The food group includes all fruit and vegetable items not included in the citrus fruit and tomato group, the high vitamin A fruit and vegetable group, and the potato group. The household diet included an estimated 11 selections per week from a list of 84 reported items. Foods in this group contributed nearly 13 percent of the vitamin C, 7 percent of the vitamin A value, and 3 percent of the calcium consumed from the day's home food supply.

I. Flour and Cereal Products

Households selected flour and cereal products, including homemade self-rising flour biscuits, three to four times a day. Sliced bread accounted for 42 percent of the selections with intakes averaging 1.66 slices per person per day. Approximately 94 percent of the sliced bread selections was white enriched bread. Biscuits were preferred to cornbread, corn pone, and rolls.

Corn flakes accounted for 3 out of ten selections of a cold breakfast cereal. Grits represented 6 of ten selections of a hot breakfast cereal and oatmeal accounted for an additional 3 selections.

Altogether, flour and cereal products contributed 23 percent of the calories, 23 percent of the iron, 21 percent of the calcium, 16 percent of the protein, and about one-fifth of the B-vitamins consumed from the home source. Homemade self-rising flour biscuits alone accounted for 8 percent of the calcium.

J. Desserts

The food group includes non-confection desserts except for cake with icing. The household diet included desserts an average of six times a week. Cookies accounted for 44 percent of the selections, cakes for 30 percent and pies for 15 percent. Sandwich-type cookies were preferred 5 to one over other cookies; devil's food was the leading cake selection; apple was the favorite pie.

Altogether, items in the food group contributed 6 percent of the day's calories and 2 percent of the calcium.

K. Sugar and Sweets

Sugar from the home sugar bowl averaged 3 teaspoons per person per day. This amount does not include sugar used in recipes. Carbonated beverages averaged 2.5 ounces per person per day. Koolaid and lemonade averaged an additional one ounce per person per day.

Jelly and syrup were used an average of 3 times a week. Candy-type confections averaged one use per week; milk chocolates were preferred.

As a whole, the sugar and sweets group contributed 7 percent of the day's home source calories and less than 1 percent of the calcium, vitamin A value and vitamin C.

L. Fats, Oils and Cream

Bacon was included in the household diet two to three times a week on the average. Pork salt meat averaged one use per week. Butter or margarine averaged one use per day; four of five selections were margarine. Lard was preferred 3 to 1 over other cooking fats and oils. Mayonnaise and salad dressings were used an average of 3 times a week; french dressing was preferred to other commercially prepared salad dressings.

Altogether, the group contributed 8 percent of the total day's home source calories and 5 percent of the vitamin A value.

M. Mixed Food

Items in the group include mixed foods which were not reportable in constituent parts for inclusion in the appropriate food groups. The group is not, therefore, representative of mixed foods in general. Pastas,

for example, were included in the flour and cereal food group if the amounts of the individual ingredients of the mixed dish were determinable.

Spaghetti with tomato sauce, meat sauce, or meat balls in tomato sauce was the most frequently reported mixed dish. Other frequent selections were chili con carne with or without beans, macaroni and cheese, beef stew, meatballs, and pizza, in that order. The group as a whole contributed approximately two percent each of the day's home source calories, calcium, and vitamin C and three percent of the vitamin A value.

N. Soups and Sauces

Households averaged 2 to three selections per week. Four of ten soup selections were vegetarian vegetable or beef vegetable; chicken noodle was the next most frequent selection. Altogether, 20 different canned, frozen, or dehydrated soups were reported.

The food group contributed approximately 2 percent of the day's home source calories and 5 percent of the vitamin A value.

O. Condiments

North Carolinians averaged one cup (8.1 ounces) of coffee per day and one-half cup (4.6 ounces) of tea. Approximately one of every 25 households reported the use of some alcoholic beverage. Beer was preferred with 80 proof alcohol (gin, rum, vodka, and whiskey) the next most frequent choice.

P. Highlights

- Dairy products, flour and cereal products and homemade self-rising flour biscuits together provided 73 percent of the home source calcium.

- Meat, poultry, fish, eggs, flour and cereal products and homemade self-rising flour biscuits accounted for nearly two-thirds of the home source protein and iron. Although legumes and nuts were used an average of 4 times a week, some selections--namely, canned or frozen lima beans--were not good iron and protein sources.

- High vitamin A fruits and vegetables accounted for 30 percent of the home source vitamin A value. Meat and eggs were major secondary sources.

- Fruits and vegetables supplied 89 percent of the vitamin C.

VI. FOOD CONSUMPTION BY SELECTED HOUSEHOLD CHARACTERISTICS

Food consumption levels of survey households have been examined in relation to geographical region, household income, homemaker's nutrition knowledge, and homemaker's education. Detailed tables, available by request, show the average weekly frequency of using different foods and the per person per meal quantities of foods consumed in the several population sectors studied [5]. In this report, highlights of the frequency data are discussed and the per person per meal quantities of food are summarized in tabular and graphic modes.

In the Appendix, Tables 1-4 compare the average quantities of foods comprising diets in selected population sectors. Regional data are shown in Table 1. Tables 2-4 show food quantities for the highest and lowest levels of income, homemaker's nutrition knowledge, and homemaker's education.

Figure 1 on page 37 depicts the relative quantities of foods consumed in different population sectors. Overlays and the plus symbol (+) are used as follows:

+	HIGH	Average quantity in the population sector exceeded the State average by at least 25 percent.
	AVERAGE	Average quantity in the population sector was 75 percent to 125 percent of the State average.
	LOW	Average quantity in the population sector was at least 25 percent below the State average.
	MINIMAL	Average quantity in the population sector was at least 50 percent below the State average.

The choice of the above-stated percentages was arbitrary. In the determination of the percentages, average food quantities observed in a population sector [5] were compared to the following average quantities observed in the State sample:

Dairy Products	- 101.7 grams per meal
Beef	- 19.9 grams per meal
Pork	- 13.0 grams per meal
Veal and Lamb	- 0.5 grams per meal
Sausage and Luncheon Meat	- 8.1 grams per meal
Fish and Shellfish	- 5.1 grams per meal
Poultry	- 8.9 grams per meal
Eggs	- 19.2 grams per meal
Legumes and Nuts	- 18.8 grams per meal
Citrus Fruits and Tomatoes	- 36.7 grams per meal
High Vitamin A Fruits and Vegetables	- 11.8 grams per meal
White Potatoes	- 24.8 grams per meal
Other Fruits and Vegetables	- 39.9 grams per meal
Flour and Cereal Products	- 61.4 grams per meal
Homemade Self-Rising Flour Biscuits	- 10.0 grams per meal
Desserts	- 14.0 grams per meal
Sugar and Sweets	- 58.6 grams per meal
Fats, Oils and Cream	- 8.8 grams per meal
Mixed Food	- 12.7 grams per meal
Soups and Sauces	- 16.5 grams per meal
Condiments	- 165.5 grams per meal

In the sections which follow, the relative food quantities depicted in Figure 1 have been summarized as "diet profiles" applicable to the different population sectors. Due to very limited use of veal and lamb, that food group is not included. Otherwise, foods not listed in the profiles were consumed in "average" amounts, i.e., the average quantity in the population sector was between 75 percent and 125 percent of the State average.

A. Geographical Regions

Average quantities of food consumed in the three regions are shown in Table 1 of the Appendix. For ten of the 21 food groups studied, quantities were highest in the Piedmont.

For all meat, poultry and fish combined, per person per meal quantities were 53 grams in the East, 61 grams in the Piedmont and 49 grams in the West. Averages for fruits and vegetables were 99 grams in the East, 112 grams in the Piedmont and 128 grams in the West. Consumption of dairy products was higher in the West (121 grams) than in the East (98 grams) or the Piedmont (89 grams).

When regional quantities are compared to State averages (Figure 1), few differences are observed. Poultry consumption was low in the West and high in the Piedmont. Low intakes of homemade self-rising flour biscuits were observed in the Eastern Region.

B. Household Income

Table 2 of the Appendix compares average food quantities observed at the highest and lowest levels of income. For all meat, poultry and fish selections, per person per meal averages were 58 grams in the high income group ($9000 or more) compared to 44 grams in the low income group (under $1500). Consumption of fruits and vegetables averaged 130 grams at the high income level compared to 100 grams at the low income level. A greater difference was observed for dairy products, averages being 119 grams and 77 grams for high and low incomes respectively. Findings also reveal that high income households consumed relatively high quantities of desserts, sugar and sweets, mixed food, soups and sauces, and condiments.

Observing average food quantities across the entire economic spectrum [5], highest quantities of dairy products were found at high income levels, but no difference was observed between the two lower income groups or the two upper. Only in the case of beef did higher income parallel higher consumption of meat, poultry and fish. Average consumption of fruits and vegetables was highest at the high income level but was higher in the $1500-2999 range than in the $3000-8999 range.

The diet profiles on page 31 indicate foods that different income groups consumed in relatively high and in low to minimal quantities, when compared to State averages. Of particular interest may be findings that the middle income group, $3000-5999, averaged low intakes of desserts only and that income differentials were not observed for pork, white potatoes, flour and cereal products, fats, and condiments.

The average number of times a food was used was generally high in income groups in which consumption of the food was high, and conversely. One exception was that flour and cereal products were used most often at high income levels, but larger amounts were consumed at low levels of income [5].

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DIET PROFILES BY HOUSEHOLD INCOME
(ALL HOUSEHOLDS)

HOUSEHOLD INCOME	CONSUMPTION OF THESE FOODS WAS HIGH[1]	CONSUMPTION OF THESE FOODS WAS LOW TO MINIMAL[2]
Under $1500	- Sausage and Luncheon Meat - Eggs - High Vitamin A Fruits and Vegetables - Homemade Self-Rising Flour Biscuits	- Beef - Fish and Shellfish - Poultry - Citrus Fruits and Tomatoes - Desserts - Sugar and Sweets - Mixed Food - Soups and Sauces
$1500-2999	- Fish and Shellfish - Poultry - High Vitamin A Fruits and Vegetables	- Dairy Products - Beef - Sausage and Luncheon Meat - Mixed Food
$3000-5999	- Sausage and Luncheon Meat - Fish and Shellfish - Legumes and Nuts - Homemade Self-Rising Flour Biscuits	- Desserts
$6000-8999	- Soups and Sauces	- Fish and Shellfish - High Vitamin A Fruits and Vegetables
$9000 or more	- Beef - Citrus Fruits and Tomatoes - Other Fruits and Vegetables - Desserts	- Legumes and Nuts - Homemade Self-Rising Flour Biscuits

[1]Average quantity was at least 25 percent above the State average.
[2]Average quantity was at least 25 percent below the State average.

C. Nutrition Knowledge of the Homemaker

Table 3 of the Appendix compares food quantities according to nutrition knowledge of the homemaker (good knowledge versus very limited knowledge). Diets in the good knowledge group were twice as abundant in dairy products. Per person per meal quantities of meat, poultry and fish averaged 56 grams in the good knowledge group compared to 44 grams in the very limited knowledge group. Overall consumption of fruits and vegetables was similarly higher in the presence of good knowledge (130 grams compared to 102 grams). Consistent with findings observed in the income comparison, the good knowledge group also consumed relatively high quantities of desserts, sugar and sweets, mixed food, soups and sauces, and condiments.

The diet profiles on page 33 describe foods consumed in different nutrition knowledge groups in terms of State averages. Of particular interest are findings that the middle knowledge group consumed "average" quantities of all foods and that knowledge differences were not observed for pork, sausage and luncheon meat, eggs, white potatoes, flour and cereal products, desserts, and condiments.

Findings for the frequency of using foods in different nutrition knowledge groups paralleled findings observed in the income comparison: the good knowledge group selected flour and cereal products most often, but average consumption was highest in the very limited knowledge group. Otherwise, the number of food uses generally paralleled the quantity of food consumed. [5]

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DIET PROFILES BY HOMEMAKER'S NUTRITION KNOWLEDGE
(ALL HOUSEHOLDS)

NUTRITION KNOWLEDGE	CONSUMPTION OF THESE FOODS WAS HIGH[1]	CONSUMPTION OF THESE FOODS WAS LOW TO MINIMAL[2]
Very Limited	- Fish and Shellfish - Poultry - Legumes and Nuts - High Vitamin A Fruits and Vegetables - Homemade Self-Rising Flour Biscuits - Fats, Oils and Cream	- Dairy Products - Beef - Citrus Fruits and Tomatoes - Sugar and Sweets - Mixed Food - Soups and Sauces
Limited	- Average Quantities of All Foods -	
Good	- Beef - Citrus Fruits and Tomatoes - Other Fruits and Vegetables - Mixed Food - Soups and Sauces	- Fish and Shellfish - Legumes and Nuts - Homemade Self-Rising Flour Biscuits

[1] Average quantity was at least 25 percent above the State average.
[2] Average quantity was at least 25 percent below the State average.

D. Education of the Homemaker

Food quantities observed at high and low levels of the homemaker's education are shown in Table 4 of the Appendix. Altogether, quantities of meat, poultry and fish averaged 62 grams per person per meal in the high education group (16 or more years) compared to 49 grams per person per meal in the low education group (0-6 years). Average quantities of fruits and vegetables were 145 grams and 98 grams respectively at high and low levels of the homemaker's education. Dairy products were only slightly more abundant in the presence of high education. Findings for larger quantities of desserts, mixed food, sugar and sweets in the high education group parallel findings observed in the income and nutrition knowledge comparisons.

As noted in Section IV of this report, survey results indicated that 13-15 years of homemaker's education was associated with nutrient deficiency more often than was 11-12 years of homemaker's education. A comparison of food quantities in these two education groups shows that average quantities of nearly all foods were lower at the 13-15 year level [5]. Exceptions were in that group's greater consumption of fish and shellfish, desserts, soups and sauces, and condiments.

The diet profiles on page 35 describe relative food quantities for the several homemaker's education groups. Compared to the State as a whole, the 11-12 year group averaged low intakes of legumes and nuts and homemade self-rising flour biscuits only. At the 7-10 year level, only beef and other fruits and vegetables were consumed in low quantities. Education differences were not observed for dairy products, poultry, and condiments.

When the number of food uses in different education groups are examined, findings are similar to those observed for income and nutrition

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DIET PROFILES BY HOMEMAKER'S EDUCATION
(ALL HOUSEHOLDS)

EDUCATION	CONSUMPTION OF THESE FOODS WAS HIGH[1]	CONSUMPTION OF THESE FOODS WAS LOW TO MINIMAL[2]
0-6 years	- Pork - Eggs - Legumes and Nuts - High Vitamin A Fruits and Vegetables - Homemade Self-Rising Flour Biscuits	- Beef - Sausage and Luncheon Meat - Citrus Fruits and Tomatoes - Other Fruits and Vegetables - Desserts - Sugar and Sweets - Mixed Food
7-10 years	- Sausage and Luncheon Meat - Legumes and Nuts - Homemade Self-Rising Flour Biscuits	- Beef - Other Fruits and Vegetables
11-12 years	- Beef	- Legumes and Nuts - Homemade Self-Rising Flour Biscuits
13-15 years	- Desserts - Soups and Sauces	- Sausage and Luncheon Meat - Legumes and Nuts - Homemade Self-Rising Flour Biscuits - Fats, Oils and Cream
16 or more years	- Beef - Citrus Fruits and Tomatoes - Other Fruits and Vegetables - Desserts - Mixed Food	- Fish and Shellfish - Legumes and Nuts - White Potatoes - Flour and Cereal Products - Fats, Oils and Cream

[1]Average quantity was at least 25 percent above the State average.
[2]Average quantity was at least 25 percent below the State average.

knowledge [5]. While consumption of flour and cereal products was highest at lower levels of education, these foods were used most often at the 11-12 year level. Otherwise, the number of times a food was used generally paralleled the quantity of food consumed in the several homemaker's education groups.

E. Highlights

Findings capsuled below are based on data available in detailed tables [5] and on summary data depicted in Figure 1. Definitions for the four levels of relative quantities shown in Figure 1 are given on page 27.

- Regional differences in food consumption were most notable for poultry (quantity high in the Piedmont and low in the West) and homemade self-rising flour biscuits (quantity low in the East). Consumption of fruits and vegetables was lowest in the East and consumption of dairy products was lowest in the Piedmont.

- At higher levels of income, homemaker's nutrition knowledge and homemaker's education, diets usually included higher quantities of beef, citrus fruits and tomatoes, other fruits and vegetables, desserts, sugar and sweets, mixed food, and soups and sauces.

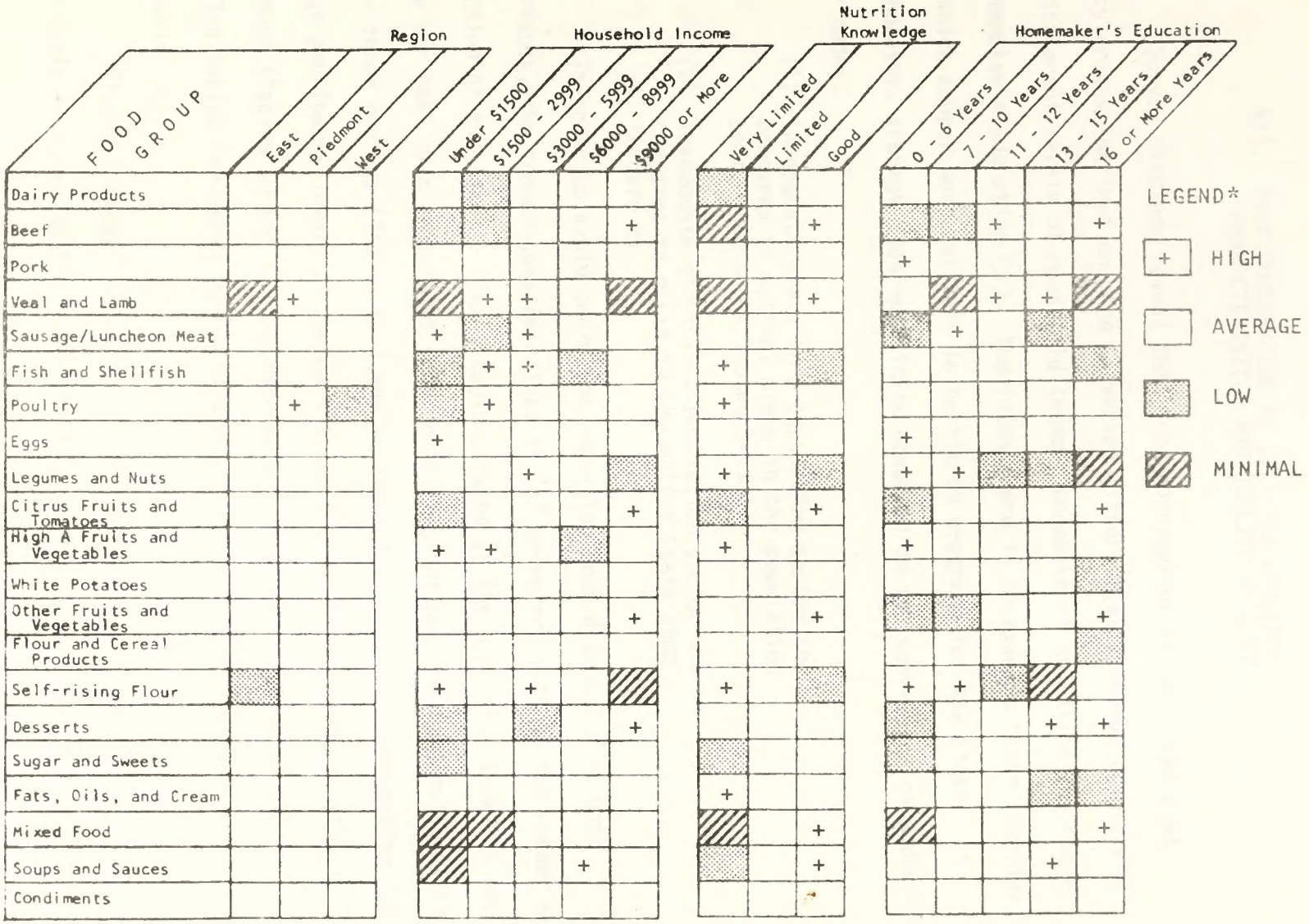
- At higher levels of income, homemaker's nutrition knowledge and homemaker's education, diets usually included lower quantities of fish and shellfish, eggs, legumes and nuts, high vitamin A fruits and vegetables, and homemade self-rising flour biscuits.

- At middle levels of income, homemaker's nutrition knowledge and homemaker's education, diets usually included average to high quantities of nearly all foods.

- Generally, high consumption of a food was associated with high frequency of using the food, and conversely. The major exception was flour and cereal products. While consumption was highest at low levels of income, homemaker's nutrition knowledge and homemaker's education, these foods were used most often at high levels of income and nutrition knowledge and at the 11-12 year level of homemaker's education.

FIGURE 1

Relative Quantities of Food Consumed: All Households
North Carolina Nutrition Survey, 1970



*For definitions of the four levels of relative quantities, see page 27.

VII. FOOD CONSUMPTION BY SELECTED HOUSEHOLD CHARACTERISTICS AND QUALITY OF DIET

Survey findings reveal that food consumption in the three diet adequacy groups (defined on page 3) varied differentially among regions and among different levels of household income, homemaker's nutrition knowledge, and homemaker's education [5]. The intent here is to examine those associations which appear most relevant to nutrition programs for the State. In this endeavor, average food quantities observed in the survey are considered in two modes:

(1) inadequate diets in a population sector are compared to optimal diets in the population sector (Appendix Tables 5-13);

(2) inadequate diets in a population sector are compared to diets in the entire State sample (Figure 2).

In order to avoid confusion resulting from discussion of both comparisons, the comparisons described in (1) above are left to the reader's inspection of the tables. These tables, found in the Appendix, show the per person per meal gram amounts of food comprising optimal and inadequate diets in the three regions (Tables 5-7) and in population sectors representing the highest and lowest levels of income (Tables 8 and 9), homemaker's nutrition knowledge (Tables 10 and 11) and homemaker's education (Tables 12 and 13). Detailed tables for other levels of the classification variables are available [5].

Figure 2 (page 51) depicts food quantities observed among inadequate diets relative to the State averages given on page 28. Overlays and

the plus symbol (+) have been used to show the following arbitrarily-chosen levels of quantity:

Average quantity among inadequate diets in the population sector exceeded the State average by at least 25 percent.

Average quantity among inadequate diets in the population sector was 75 percent to 125 percent of the State average.

Average quantity among inadequate diets in the population sector was at least 25 percent below the State average.

Average quantity among inadequate diets in the population sector was at least 50 percent below the State average.

Similarly as in Section VI, findings depicted in Figure 2 have been summarized as "diet profiles" applicable to inadequate diets in the different population sectors. Again, due to limited use, veal and lamb are not included. Otherwise, foods listed in the profiles were consumed in high or minimal amounts and unlisted foods in low to average amounts, i.e., the average quantity among inadequate diets was between 50 percent and 125 percent of the State average.

In addition to the comparisons described above for population sectors, this report describes diet adequacy groups for the State as a whole.

A. The State

For three levels of dietary adequacy and for the 21 food groups of this report, a previous report details survey findings for the average weekly frequency of using foods, the average quantity of food consumed and the average caloric and nutrient intakes [4]. Findings are highlighted below.

Households with inadequate diets used most foods less often than other households. For example, inadequate diets included dairy products an average of 14 times per week whereas optimal diets averaged 22 times a week; inadequate diets included meat, poultry and fish an average of 12 times a week while optimal diets averaged 15 times per week; and inadequate diets included fruits and vegetables only 14 times per week compared to an average of 33 times per week among optimal diets. Foods used most similarly in the two diet groups were sausage and luncheon meat, fish and shellfish, poultry, soups and sauces.

Examining quantity differences between optimal and inadequate diets, the inadequate diets were more abundant in fish and shellfish, soups and sauces, and were similarly abundant in sausage and luncheon meat, poultry, sugar and sweets. Otherwise, inadequate diets included lower quantities of foods, for example, 56 percent less dairy products and 67 percent less fruits and vegetables.

As shown in the table on the following page, inadequate diets consistently involved smaller quantities of calories and nutrients than did adequate or optimal diets. These low quality diets were particularly deficient in vitamin C, vitamin A value, and calcium.

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QUANTITIES OF CALORIES AND NUTRIENTS BY QUALITY OF DIET

Calories and Nutrients	Per Person Per Meal Amounts			
	All Diet Classes	Optimal Diets	Adequate Diets	Inadequate Diets
Calories	762.6	1027.7	707.2	603.5
Protein (gm)	29.4	40.2	27.1	23.2
Calcium (mg)	268.7	366.3	263.0	183.8
Iron (mg)	4.9	7.0	4.3	3.8
Vitamin A value (IU)	1746.8	2838.1	1611.8	918.4
Thiamine (mg)	0.5	0.8	0.4	0.3
Riboflavin (mg)	0.6	0.9	0.5	0.4
Preformed Niacin (mg)	6.0	8.2	5.6	4.7
Vitamin C (mg)	26.9	41.7	26.3	13.5
NUMBER OF MEALS	8958	2325	4267	2366

NOTE: The average caloric and nutrient intakes shown above are based on the composition tables of USDA Handbook No. 8 [6] and the Tulane Dietant [7].

North Carolina Nutrition Survey

DIET PROFILES BY REGION
(HOUSEHOLDS WITH INADEQUATE DIETS)

REGION	CONSUMPTION OF THESE FOODS WAS HIGH[1]	CONSUMPTION OF THESE FOODS WAS MINIMAL[2]
East	- Sausage and Luncheon Meat - Fish and Shellfish - Soups and Sauces	- Citrus Fruits and Tomatoes - Mixed Food
Piedmont	- Poultry	- Dairy Products - Beef - Fish and Shellfish - Citrus Fruits and Tomatoes - High Vitamin A Fruits and Vegetables - White Potatoes - Other Fruits and Vegetables - Mixed Food
West	- Fish and Shellfish - Soups and Sauces	- Pork - Poultry - High Vitamin A Fruits and Vegetables - Homemade Self-Rising Flour Biscuits

[1] Average quantity was at least 25 percent above the State average.
[2] Average quantity was at least 50 percent below the State average.

B. Geographical Regions

As previously reported, inadequate diets were observed among 38 percent of Eastern households compared with 25 percent of Piedmont households and 21 percent of Western households. Only in the case of iron did nutrient deficiency appear more prevalent in the West than in the remainder of the State. Deficiencies in calories and all other nutrients were most numerous in the East. [1]

Figure 2 (page 51) and the diet profiles given on page 43 summarize food consumption levels observed among inadequate diets in different geographical regions. In all three regions, inadequate diets included average to high quantities of sausage and luncheon meat, legumes and nuts, flour and cereal products, sugar and sweets, condiments, soups and sauces. Otherwise, inadequate diets in one or more regions included low to minimal quantities of foods. The number of minimal food quantities was especially high among Piedmont inadequate diets, a finding that is notable since Piedmont diets as a whole were relatively abundant in a wide variety of foods (see Appendix, Table 1).

Food deficits indicated in the diet profiles are generally conservative in that inadequate diets are compared to State averages. Deficits among inadequate diets are even more notable when a region's inadequate and optimal diets are compared as in Tables 5-7 of the Appendix.

C. Household Income

Inadequate diets were found at all levels of income, with the percentage inadequacy decreasing from 46 percent among low income households (under $1500) to 22 percent among high income households ($9000 or more). Iron deficiency was most prevalent at the highest level of income. [1]

North Carolina Nutrition Survey

DIET PROFILES BY HOUSEHOLD INCOME
(HOUSEHOLDS WITH INADEQUATE DIETS)

HOUSEHOLD INCOME	CONSUMPTION OF THESE FOODS WAS HIGH[1]	CONSUMPTION OF THESE FOODS WAS MINIMAL[2]
Under $1500	- Sausage and Luncheon Meat - Homemade Self-Rising Flour Biscuits	- Dairy Products - Citrus Fruits and Tomatoes - Other Fruits and Vegetables - Mixed Food
$1500-2999	- Fish and Shellfish - Poultry - Eggs - Sugar and Sweets	- Beef - Citrus Fruits and Tomatoes - High Vitamin A Fruits and Vegetables - Other Fruits and Vegetables - Desserts - Mixed Food
$3000-5999	- Sausage and Luncheon Meat - Fish and Shellfish - Legumes and Nuts	- Beef - Citrus Fruits and Tomatoes - White Potatoes - Other Fruits and Vegetables - Desserts - Mixed Food
$6000-8999	- Sugar and Sweets - Soups and Sauces	- Pork - Fish and Shellfish - Citrus Fruits and Tomatoes - High Vitamin A Fruits and Vegetables - Homemade Self-Rising Flour Biscuits
$9000 or More	- Fish and Shellfish - Desserts - Sugar and Sweets - Soups and Sauces	- Pork - Eggs - Legumes and Nuts - High Vitamin A Fruits and Vegetables - White Potatoes - Homemade Self-Rising Flour Biscuits - Fats, Oils and Cream

[1]Average quantity was at least 25 percent above the State average.
[2]Average quantity was at least 50 percent below the State average.

Figure 2 and the diet profiles on page 45 describe food consumption levels for inadequate diets in different income groups. Compared to State averages, inadequate diets in 4 of the five income groups included average to high quantities of fish and shellfish, poultry, eggs, flour and cereal products, sugar and sweets, condiments, soups and sauces. At all levels of income, inadequate diets included minimal quantities of 4 or more food groups.

Tables 8 and 9 of the Appendix compare optimal and inadequate diets at the highest and lowest levels of income. As noted in the region comparison, these tables tend to point up even greater food deficits among inadequate diets than those indicated in the diet profiles where inadequate diets are compared to State averages.

One particular finding revealed in Table 9 and worthy of mention is that inadequate diets at the lowest level of income included more grams of beef than any other meat, poultry, or fish selection. In Section V of this report, it is shown that hamburger was the form of beef most often selected by households in the State. The point here is that the greater selection of beef by households with inadequate diets and low income was probably entirely cost-motivated since hamburger for a family costs less than an equivalent amount of edible poultry, fish, or other meat.

D. Nutrition Knowledge of the Homemaker

Inadequate diets were found at all levels of the homemaker's nutrition knowledge with the percentage inadequacy decreasing from 27 percent in the very limited knowledge group to 20 percent in the good knowledge group. Greater nutrition knowledge of the homemaker appeared related to improvements in vitamin and calcium levels, but deficiencies in iron were most prevalent at upper levels of knowledge. [1]

North Carolina Nutrition Survey

DIET PROFILES BY HOMEMAKER'S NUTRITION KNOWLEDGE
(HOUSEHOLDS WITH INADEQUATE DIETS)

NUTRITION KNOWLEDGE	CONSUMPTION OF THESE FOODS WAS HIGH[1]	CONSUMPTION OF THESE FOODS WAS MINIMAL[2]
Very Limited	- Sausage and Luncheon Meat - Fish and Shellfish - Legumes and Nuts	- Dairy Products - Beef - Citrus Fruits and Tomatoes - Other Fruits and Vegetables - Mixed Food - Soups and Sauces
Limited	- None	- Citrus Fruits and Tomatoes - High Vitamin A Fruits and Vegetables - White Potatoes - Other Fruits and Vegetables - Mixed Food
Good	- Fish and Shellfish - Desserts - Soups and Sauces	- Pork - High Vitamin A Fruits and Vegetables - Homemade Self-Rising Flour Biscuits - Fats, Oils and Cream

[1]Average quantity was at least 25 percent above the State average.
[2]Average quantity was at least 50 percent below the State average.

Figure 2 and the diet profiles on page 47 describe food consumption levels for inadequate diets in different nutrition knowledge groups. Compared to State averages, inadequate diets at all levels of knowledge included average to high quantities of sausage and luncheon meat, fish and shellfish, sugar and sweets. Otherwise, food quantities were low to minimal in one or more of the knowledge groups.

Tables 10 and 11 of the Appendix compare optimal and inadequate diets observed at high and low levels of the homemaker's nutrition knowledge. Again, the tables often point up even greater food deficits among inadequate diets than those observed when inadequate diets are compared to State averages, as in the diet profiles.

E. Education of the Homemaker

When the homemaker had completed either 11-12 years or 16 or more years of schooling, approximately one-fifth of the household diets were rated inadequate. At all other levels of the homemaker's education, approximately one-third of the diets were inadequate.

As indicated by Figure 2 and the corresponding diet profiles on page 49, inadequate diets at all levels of homemaker's education included average to high quantities of eggs, condiments, soups and sauces; otherwise, food quantities were low to minimal in one or more education groups. Most notable are the findings for 11-12 years of schooling: inadequate diets included minimal quantities of only 3 food groups. In contrast, at higher and lower levels of the homemaker's education, inadequate diets included minimal quantities of 5 or more food groups.

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DIET PROFILES BY HOMEMAKER'S EDUCATION
(HOUSEHOLDS WITH INADEQUATE DIETS)

EDUCATION	CONSUMPTION OF THESE FOODS WAS HIGH[1]	CONSUMPTION OF THESE FOODS WAS MINIMAL[2]
0-6 years	- Poultry - Legumes and Nuts - Homemade Self-Rising Flour Biscuits - Soups and Sauces	- Beef - Pork - Citrus Fruits and Tomatoes - High Vitamin A Fruits and Vegetables - White Potatoes - Other Fruits and Vegetables - Mixed Food
7-10 years	- Sausage and Luncheon Meat - Fish and Shellfish - Legumes and Nuts	- Citrus Fruits and Tomatoes - High Vitamin A Fruits and Vegetables - White Potatoes - Other Fruits and Vegetables - Mixed Food
11-12 years	- Sausage and Luncheon Meat - Fish and Shellfish - Sugar and Sweets	- Citrus Fruits and Tomatoes - Fats, Oils and Cream - Mixed Food
13-15 years	- Fish and Shellfish - Desserts - Soups and Sauces	- Pork - Legumes and Nuts - High Vitamin A Fruits and Vegetables - White Potatoes - Homemade Self-Rising Flour Biscuits - Fats, Oils and Cream
16 or more years	- Poultry - Soups and Sauces	- Dairy Products - Fish and Shellfish - Flour and Cereal Products - Homemade Self-Rising Flour Biscuits - Desserts - Fats, Oils and Cream - Mixed Food

[1]Average quantity was at least 25 percent above the State average.
[2]Average quantity was at least 50 percent below the State average.

Tables 12 and 13 of the Appendix compare optimal and inadequate diets for the highest and lowest levels of homemaker's education. As noted in previous comparisons, these tables tend to point up even greater deficits among inadequate diets than those indicated by the diet profiles where inadequate diets are compared to State averages.

F. Highlights

Findings summarized below are based on data available in detailed tables [5] and on data depicted in Figure 2. Definitions for the four levels of relative quantities shown in Figure 2 are given on page 40.

- In a majority of the population sectors studied, inadequate diets included low to minimal quantities of dairy products, fruits and vegetables. Low quantities of these and other foods were particularly prominent among inadequate diets of the Piedmont Region.

- Inadequate diets at higher levels of income, homemaker's nutrition knowledge and homemaker's education often included low to minimal quantities of pork, legumes and nuts, high vitamin A fruits and vegetables, white potatoes, homemade self-rising flour biscuits, and fats. Minimal quantities of dairy, flour and cereal products were also observed among inadequate diets at high levels of the homemaker's education.

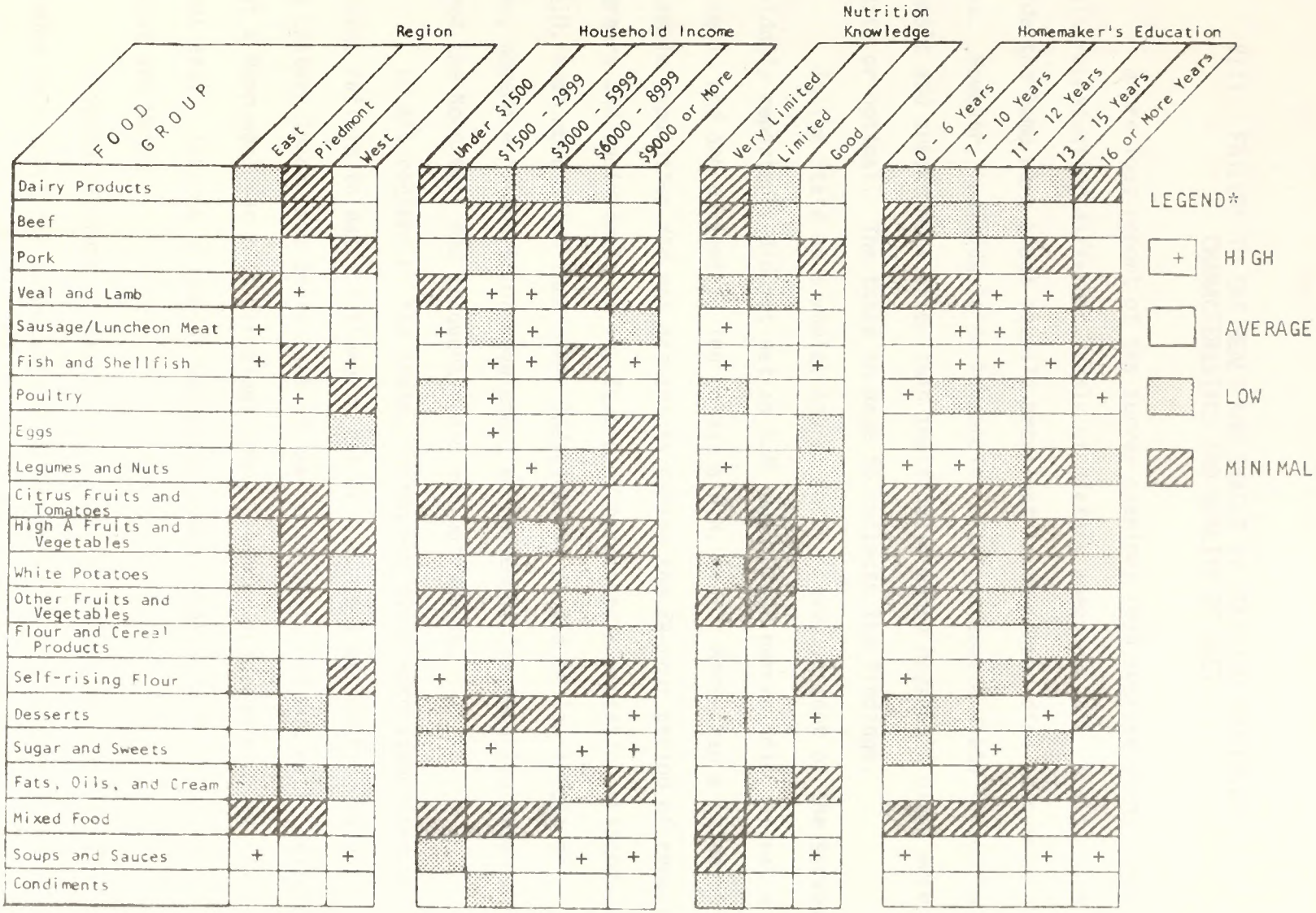
- Inadequate diets at lower levels of income, homemaker's nutrition knowledge and homemaker's education often included low to minimal quantities of dairy products, beef, fruits, vegetables, desserts, and mixed food.

- Inadequate diets at the 11-12 year level of homemaker's education included fewer minimal food quantities than did inadequate diets at upper and lower levels of education.

- In at least three-quarters of the sixteen population sectors studied, inadequate diets included average to high quantities of sausage and luncheon meat, fish and shellfish, eggs, flour and cereal products, sugar and sweets, condiments, soups and sauces.

FIGURE 2

Relative Quantities of Food Consumed: Households with Inadequate Diets
North Carolina Nutrition Survey, 1970



*For definitions of the four levels of relative quantities, see page 40.

VIII. FAILURE TO EAT MEALS AND SNACKS BY SELECTED HOUSEHOLD CHARACTERISTICS AND QUALITY OF DIET

A previous report of the survey examines food sources among individuals representing different levels of dietary adequacy [4]. Meals eaten outside the home were about equally prevalent in the three diet adequacy groups. However, individuals in households with inadequate diets failed to eat meals and snacks more often than individuals whose household diets were adequate or optimal. The table on page 55 reflects the findings.

In the State as a whole, approximately seven percent of the survey individuals reportedly did not eat an A.M. meal, four percent did not eat a Noon meal, and one percent failed to eat a P.M. meal. More than a third of the sample population did not eat snacks during the 24-hour period of recall. Easterners and individuals at low levels of homemaker's education skipped the A.M. meal more often than other individuals; people at low levels of income, homemaker's nutrition knowledge, and homemaker's education often skipped the Noon meal and frequently did not eat snacks.

In all regions of the State, inadequate diets were associated with increased failure to eat. Failure to eat an A.M. meal was most prevalent among Eastern inadequate diets (16% of the individuals did not eat); failure to eat a Noon meal was most prevalent among Piedmont inadequate diets (11% did not eat). Absence of snacks was noted among inadequate diets of the Piedmont and West.

Inadequate diets at nearly all levels of income and nutrition knowledge were similarly associated with increased failure to eat. Failure

to eat an A.M. meal was notable among inadequate diets at the highest levels of income and nutrition knowledge; failure to eat a Noon meal was most prevalent at low levels of these two factors.

Unlike findings for income and nutrition knowledge, inadequate diets at high levels of the homemaker's education were not associated with high failure to eat meals. However, snacks were used least often when the homemaker had completed 16 or more years of schooling.

Related to these findings, it was observed in the survey that the A.M. meal and snacks substantially increased the household population's ingestion of calcium and vitamin C [8]. Thus, for these two nutrients at least, mere failure to eat the A.M. meal and snacks may have resulted in much of the deficiency observed in the survey.

North Carolina Nutrition Survey

NUMBER AND PERCENTAGE OF MEALS AND SNACKS
BY SOURCE OF FOOD AND QUALITY OF DIET

Ingestion Period and Quality of Diet	Source of Meals and Snacks								Total	
	Home Source		Other Source		Did Not Eat		Unknown			
	No.	%	No.	%	No.	%	No.	%	No.	%
A.M.										
Total	3412	84.2	309	7.6	266	6.6	64	1.6	4051	100.0
Optimal	885	84.9	89	8.5	47	4.5	22	2.1	1043	100.0
Adequate	1628	85.5	142	7.5	100	5.3	33	1.7	1903	100.0
Inadequate	899	81.4	78	7.1	119	10.8	9	0.8	1105	100.0
NOON										
Total	1974	48.7	1834	45.3	176	4.3	67	1.7	4051	100.0
Optimal	516	49.5	475	45.5	28	2.7	24	2.3	1043	100.0
Adequate	960	50.4	851	44.7	61	3.2	31	1.6	1903	100.0
Inadequate	498	45.1	508	46.0	87	7.9	12	1.1	1105	100.0
P.M.										
Total	3572	88.2	375	9.3	40	1.0	64	1.6	4051	100.0
Optimal	924	88.6	88	8.4	3	0.3	28	2.7	1043	100.0
Adequate	1679	88.2	183	9.6	19	1.0	22	1.2	1903	100.0
Inadequate	969	87.7	104	9.4	18	1.6	14	1.3	1105	100.0
SNACKS										
Total	2105	52.0	250	6.2	1441	35.6	255	6.3	4051	100.0
Optimal	638	61.2	81	7.8	272	26.1	52	5.0	1043	100.0
Adequate	1040	54.7	103	5.4	636	33.4	124	6.5	1903	100.0
Inadequate	427	38.6	66	6.0	533	48.2	79	7.1	1105	100.0

IX. PROGRAM IMPLICATIONS

Findings of the North Carolina Nutrition Survey indicate that food utilization may be as much related to life styles as to purchasing power and knowledge. At high income levels, the ability to purchase foods did not insure that nutritional needs would be met. Similarly at high levels of the homemaker's education, or when the homemaker achieved a high score on a test of nutrition knowledge, the household diet was often grossly deficient in one or more major nutrients.

At high income levels, households selected a variety of fruits and vegetables but frequently did not include those which are rich in vitamin A--sweet potatoes, carrots, and collards, for example. At the same time, these households consumed desserts and sugar and sweets frequently and in large amounts. The motivation for these selections should be investigated, and methods for redirecting the food selection process must be determined. The primary goal of nutrition education is to effect a change, specifically in this instance, a change in the selection of foods which comprise the daily dietant.

The importance of snacking as a way of life should be recognized as a major component of every nutrition program. In the survey, snack foods were found to be a major source of calcium and vitamin C; and inadequate diets, which often involved deficiencies in these two nutrients, were associated with increased failure to eat snacks. Inadequate diets were similarly associated with a high incidence of skipped meals, particularly the A.M. meal which often includes foods that are high in calcium and

vitamin C content. Thus, life styles which permit meal skipping and discourage snacking must be considered in program planning and in development of educational materials.

Findings for the frequency of using different foods has some specific implications. Historically, nutritionists have encouraged a variety of foods in the daily diet as a means of insuring nutritive adequacy. The evidence of this report would seem to support the nutrition education approach in favor of variety: households with inadequate diets not only consumed small quantities of food, but their frequency of using different foods was limited. Although economics, education and nutrition knowledge did not insure a nutritionally adequate diet, it would appear that these factors, as well as geographical location, did make some difference in the frequency and variety of food uses. Specific programs in which participants may benefit from this kind of information are those supported by public funds, such as the National Lunch Program, the Supplemental Feeding Program for Women, Infants and Children (WIC), food stamp programs, and nutrition programs for the elderly.

Because this report indicates that factors other than availability of food influence the adequacy of a diet, those involved with the nutritional status of North Carolinians should use the report in designing their program objectives and methods of implementation. Those who design and implement programs certainly must develop capabilities for understanding and coping with the general population's concepts of nutrition. It is evident, for example, that flour and cereal products are recognized as a source of calories, but their contribution of iron and the B-vitamins to the diet is not

readily recognized. Why is this, and what methods might change such a concept? Many such challenges suggested by this report should be of value to those interested in substantially reducing the percentage of households with inadequate diets from the 1970 level of 27 percent. Let this be our basic program challenge in North Carolina.

APPENDIX

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TABLE 1

Quantity of Food Consumed by Geographical Region
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams		
	East	Piedmont	West
Eastern Households Used More			
Sausage and Luncheon Meat	9.4	8.3	6.5
Fish and Shellfish	6.3	4.2	5.2
Legumes and Nuts	20.1	17.3	19.5
Flour and Cereal Products	67.5	55.4	63.2
Sugar and Sweets	63.7	53.1	60.6
Piedmont Households Used More			
Beef	18.4	22.2	18.6
Veal and Lamb	0.0	0.9	0.4
Poultry	7.4	12.9	5.3
Eggs	19.3	19.6	18.5
Citrus Fruits and Tomatoes	32.7	38.8	37.8
High Vitamin A Fruits and Vegetables	10.2	14.0	10.5
Homemade Self-Rising Flour Biscuits	6.7	12.2	10.6
Fats, Oils and Cream	8.6	9.6	7.9
Mixed Food	10.4	14.2	12.8
Condiments	164.2	175.5	154.4
Western Households Used More			
Dairy Products	98.1	89.1	120.6
Pork	12.2	13.2	13.4
White Potatoes	21.4	23.3	29.9
Other Fruits and Vegetables	34.9	35.6	49.8
Desserts	11.3	14.7	15.5
Soups and Sauces	13.6	16.5	19.1
NUMBER OF MEALS	2646	3486	2826

TABLE 2

Quantity of Food Consumed by High and Low Household Income
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams	
	High Income ($9000 or more)	Low Income (Under $1500)
High Income Households Used More		
Dairy Products	119.4	76.8
Beef	25.6	11.0
Fish and Shellfish	5.6	3.8
Poultry	8.4	5.5
Citrus Fruits and Tomatoes	46.5	23.3
Other Fruits and Vegetables	50.8	30.8
Desserts	19.0	8.5
Sugar and Sweets	59.2	34.0
Mixed Food	15.7	5.1
Soups and Sauces	19.4	7.8
Condiments	184.1	158.9
Low Income Households Used More		
Pork	11.2	13.6
Sausage and Luncheon Meat	7.3	10.2
Eggs	15.5	24.2
Legumes and Nuts	10.1	20.1
High Vitamin A Fruits and Vegetables	9.0	20.0
White Potatoes	23.2	25.8
Flour and Cereal Products	54.2	75.2
Homemade Self-Rising Flour Biscuits	3.6	24.3
Fats, Oils and Cream	8.1	8.8
NUMBER OF MEALS	2394	843

TABLE 3

Quantity of Food Consumed by
Good and Very Limited Nutrition Knowledge of the Homemaker
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams	
	Good Nutrition Knowledge	Very Limited Nutrition Knowledge
Good Knowledge Households Used More		
Dairy Products	122.3	60.8
Beef	25.2	5.8
Veal and Lamb	0.7	0.1
Sausage and Luncheon Meat	7.9	7.1
Citrus Fruits and Tomatoes	46.6	25.5
Other Fruits and Vegetables	49.9	34.2
Desserts	16.3	12.2
Sugar and Sweets	62.7	43.7
Mixed Food	17.0	6.2
Soups and Sauces	22.9	12.2
Condiments	172.0	156.7
Very Limited Knowledge Households Used More		
Fish and Shellfish	3.7	8.7
Poultry	8.4	11.9
Eggs	17.8	23.1
Legumes and Nuts	13.0	32.1
High Vitamin A Fruits and Vegetables	10.5	17.8
White Potatoes	22.8	24.6
Flour and Cereal Products	51.2	71.1
Homemade Self-Rising Flour Biscuits	5.7	17.6
Fats, Oils and Cream	8.4	11.6
NUMBER OF MEALS	3146	825

NOTE: Pork consumption averaged 10.5 grams per meal for both nutrition knowledge groups.

TABLE 4

Quantity of Food Consumed by
High and Low Levels of Homemaker's Education
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams	
	High Education (16 or More Years)	Low Education (0-6 Years)
High Education Households Used More		
Dairy Products	99.2	81.2
Beef	28.3	10.3
Sausage and Luncheon Meat	7.4	5.9
Poultry	10.0	9.4
Citrus Fruits and Tomatoes	46.7	25.1
Other Fruits and Vegetables	71.9	26.9
Desserts	18.3	10.0
Sugar and Sweets	48.2	35.2
Mixed Food	19.2	1.7
Low Education Households Used More		
Pork	12.7	18.0
Veal and Lamb	0.0	0.5
Fish and Shellfish	3.4	5.0
Eggs	14.7	24.3
Legumes and Nuts	8.7	28.4
High Vitamin A Fruits and Vegetables	13.2	16.8
White Potatoes	12.9	28.8
Flour and Cereal Products	38.1	72.2
Homemade Self-Rising Flour Biscuits	8.2	13.0
Fats, Oils and Cream	6.3	10.3
Soups and Sauces	13.9	19.5
Condiments	167.6	174.1
NUMBER OF MEALS	696	1131

TABLE 5

EASTERN REGION
Quantity of Food Consumed by Quality of Diet
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams	
	Optimal Diet	Inadequate Diet
Optimal Diet Households Used More		
Dairy Products	152.8	56.6
Beef	24.9	15.2
Pork	23.3	7.4
Eggs	21.5	18.0
Legumes and Nuts	36.4	18.3
Citrus Fruits and Tomatoes	75.8	12.3
High Vitamin A Fruits and Vegetables	19.7	6.2
White Potatoes	25.6	13.9
Other Fruits and Vegetables	44.1	22.1
Flour and Cereal Products	89.4	57.3
Desserts	14.3	11.3
Fats, Oils and Cream	10.6	5.9
Mixed Food	17.0	5.5
Condiments	155.3	151.0
Inadequate Diet Households Used More		
Sausage and Luncheon Meat	8.5	11.9
Fish and Shellfish	4.8	8.9
Poultry	6.6	7.7
Homemade Self-Rising Flour Biscuits	5.7	6.1
Sugar and Sweets	67.8	70.7
Soups and Sauces	8.0	21.6
NUMBER OF MEALS	580	1015

NOTE: Veal and Lamb selections were not reported in the Eastern region.

TABLE 6

PIEDMONT REGION
Quantity of Food Consumed by Quality of Diet
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams	
	Optimal Diet	Inadequate Diet
Optimal Diet Households Used More		
Dairy Products	118.6	45.5
Beef	35.9	9.0
Pork	16.6	14.6
Veal and Lamb	2.4	0.8
Sausage and Luncheon Meat	10.6	7.9
Fish and Shellfish	5.7	0.9
Eggs	26.8	20.1
Legumes and Nuts	22.4	21.8
Citrus Fruits and Tomatoes	58.8	17.2
High Vitamin A Fruits and Vegetables	22.0	5.2
White Potatoes	34.1	9.4
Other Fruits and Vegetables	51.9	19.1
Flour and Cereal Products	69.2	55.9
Homemade Self-Rising Flour Biscuits	18.4	11.6
Desserts	22.2	7.5
Sugar and Sweets	61.3	53.7
Fats, Oils and Cream	13.3	6.3
Mixed Food	25.9	3.0
Soups and Sauces	18.5	17.2
Condiments	212.2	154.5
Inadequate Diet Households Used More		
Poultry	14.5	15.4
NUMBER OF MEALS	946	786

TABLE 7

WESTERN REGION
Quantity of Food Consumed by Quality of Diet
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams	
	Optimal Diet	Inadequate Diet
Optimal Diet Households Used More		
Dairy Products	155.0	90.9
Beef	32.8	16.1
Pork	24.6	4.2
Veal and Lamb	1.1	0.6
Sausage and Luncheon Meat	8.8	7.4
Poultry	4.4	1.2
Eggs	24.8	10.9
Legumes and Nuts	26.3	20.5
Citrus Fruits and Tomatoes	39.4	38.8
High Vitamin A Fruits and Vegetables	16.5	0.7
White Potatoes	48.5	13.3
Other Fruits and Vegetables	72.7	25.4
Flour and Cereal Products	73.3	61.8
Homemade Self-Rising Flour Biscuits	23.4	3.2
Desserts	18.3	14.8
Fats, Oils and Cream	10.0	4.8
Mixed Food	14.2	13.0
Inadequate Diet Households Used More		
Fish and Shellfish	2.1	10.9
Sugar and Sweets	67.7	68.5
Soups and Sauces	9.3	22.9
Condiments	144.7	162.4
NUMBER OF MEALS	799	565

TABLE 8

HIGH INCOME HOUSEHOLDS ($9000 or More)
Quantity of Food Consumed by Quality of Diet
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams	
	Optimal Diet	Inadequate Diet
Optimal Diet Households Used More		
Dairy Products	140.1	88.2
Beef	45.4	17.1
Pork	24.1	6.4
Sausage and Luncheon Meat	9.8	5.5
Eggs	22.1	8.6
Legumes and Nuts	17.8	4.6
Citrus Fruits and Tomatoes	58.1	35.6
High Vitamin A Fruits and Vegetables	18.4	0.3
White Potatoes	33.3	10.7
Other Fruits and Vegetables	57.2	32.7
Flour and Cereal Products	71.9	45.8
Homemade Self-Rising Flour Biscuits	7.8	2.0
Desserts	22.5	20.5
Fats, Oils and Cream	10.6	2.6
Mixed Food	20.6	10.2
Condiments	195.6	166.2
Inadequate Diet Households Used More		
Fish and Shellfish	2.0	9.4
Poultry	5.5	9.2
Sugar and Sweets	49.5	80.7
Soups and Sauces	13.4	40.2
NUMBER OF MEALS	646	538

TABLE 9

LOW INCOME HOUSEHOLDS (Under $1500)
Quantity of Food Consumed by Quality of Diet
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams	
	Optimal Diet	Inadequate Diet
Optimal Diet Households Used More		
Dairy Products	126.8	35.4
Pork	24.6	12.1
Poultry	6.8	5.3
Eggs	46.9	18.1
Legumes and Nuts	32.6	17.9
Citrus Fruits and Tomatoes	39.0	17.0
High Vitamin A Fruits and Vegetables	35.8	12.1
White Potatoes	41.6	15.3
Other Fruits and Vegetables	47.7	16.1
Flour and Cereal Products	88.8	66.4
Homemade Self-Rising Flour Biscuits	56.4	19.6
Desserts	11.8	7.5
Fats, Oils and Cream	10.2	8.3
Mixed Food	10.8	0.0
Condiments	194.3	173.9
Inadequate Diet Households Used More		
Beef	6.3	15.6
Sausage and Luncheon Meat	9.0	11.5
Fish and Shellfish	1.5	5.5
Sugar and Sweets	29.5	31.3
Soups and Sauces	4.2	9.8
NUMBER OF MEALS	191	352

TABLE 10

GOOD NUTRITION KNOWLEDGE OF HOMEMAKER
Quantity of Food Consumed by Quality of Diet
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams	
	Optimal Diet	Inadequate Diet
Optimal Diet Households Used More		
Dairy Products	142.1	83.5
Beef	41.2	17.0
Pork	19.9	2.9
Veal and Lamb	1.6	0.9
Poultry	11.8	7.2
Eggs	19.4	12.9
Legumes and Nuts	16.9	10.2
Citrus Fruits and Tomatoes	63.1	20.0
High Vitamin A Fruits and Vegetables	15.5	2.8
White Potatoes	28.8	12.8
Other Fruits and Vegetables	58.7	35.4
Flour and Cereal Products	66.3	36.8
Homemade Self-Rising Flour Biscuits	8.1	3.7
Sugar and Sweets	79.6	60.7
Fats, Oils and Cream	10.4	3.6
Mixed Food	22.8	10.3
Condiments	174.7	154.9
Inadequate Diet Households Used More		
Sausage and Luncheon Meat	8.5	9.5
Fish and Shellfish	2.4	7.0
Desserts	17.2	20.7
Soups and Sauces	14.8	38.0
NUMBER OF MEALS	2471	77

TABLE 11

VERY LIMITED NUTRITION KNOWLEDGE OF HOMEMAKER
Quantity of Food Consumed by Quality of Diet
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams	
	Optimal Diet	Inadequate Diet
Optimal Diet Households Used More		
Dairy Products	111.2	25.4
Poultry	24.1	5.8
Eggs	32.3	20.2
Citrus Fruits and Tomatoes	35.3	16.5
High Vitamin A Fruits and Vegetables	30.1	13.9
White Potatoes	48.6	13.3
Other Fruits and Vegetables	57.7	6.1
Flour and Cereal Products	94.1	50.5
Homemade Self-Rising Flour Biscuits	46.7	7.6
Desserts	15.3	8.5
Fats, Oils and Cream	19.3	10.0
Mixed Food	8.2	1.9
Soups and Sauces	7.4	3.5
Condiments	214.8	108.0
Inadequate Diet Households Used More		
Beef	4.9	6.3
Pork	14.3	16.1
Veal and Lamb	0.0	0.3
Sausage and Luncheon Meat	5.0	14.9
Fish and Shellfish	5.2	9.1
Legumes and Nuts	41.1	47.0
Sugar and Sweets	37.8	70.7
NUMBER OF MEALS	171	246

TABLE 12

HIGH EDUCATION OF HOMEMAKER (16 or More Years)
Quantity of Food Consumed by Quality of Diet
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams	
	Optimal Diet	Inadequate Diet
Optimal Diet Households Used More		
Dairy Products	128.9	48.2
Beef	43.4	19.5
Pork	22.3	12.0
Sausage and Luncheon Meat	12.0	6.0
Eggs	17.3	15.5
Legumes and Nuts	11.2	10.0
Citrus Fruits and Tomatoes	42.5	33.1
High Vitamin A Fruits and Vegetables	14.1	6.4
Other Fruits and Vegetables	97.5	41.9
Flour and Cereal Products	45.2	29.9
Homemade Self-Rising Flour Biscuits	20.4	1.6
Desserts	25.5	5.8
Sugar and Sweets	67.7	49.1
Fats, Oils and Cream	8.1	3.0
Mixed Food	19.1	0.0
Inadequate Diet Households Used More		
Fish and Shellfish	0.7	1.9
Poultry	3.1	29.1
White Potatoes	15.7	17.2
Soups and Sauces	11.1	24.1
Condiments	142.4	176.2
NUMBER OF MEALS	249	149

TABLE 13

LOW EDUCATION OF HOMEMAKER (0-6 Years)
Quantity of Food Consumed by Quality of Diet
North Carolina Nutrition Survey, 1970

Food Group	Per Person Per Meal Amount in Grams	
	Optimal Diet	Inadequate Diet
Optimal Diet Households Used More		
Dairy Products	133.1	55.7
Beef	22.3	7.2
Pork	12.3	2.8
Veal and Lamb	1.6	0.0
Fish and Shellfish	8.5	6.1
Eggs	27.6	22.2
Citrus Fruits and Tomatoes	57.0	8.9
High Vitamin A Fruits and Vegetables	35.6	5.5
White Potatoes	39.2	12.2
Other Fruits and Vegetables	34.7	14.9
Flour and Cereal Products	82.4	66.0
Homemade Self-Rising Flour Biscuits	17.2	12.9
Desserts	14.7	8.0
Sugar and Sweets	41.1	37.0
Fats, Oils and Cream	20.8	8.7
Mixed Food	2.6	0.0
Inadequate Diet Households Used More		
Sausage and Luncheon Meat	7.6	8.3
Poultry	7.6	13.8
Legumes and Nuts	24.2	41.5
Soups and Sauces	20.1	24.5
Condiments	171.2	176.7
NUMBER OF MEALS	190	372

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